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**MATERIALS ENGINEERING BRANCH  
CODE 541  
LABORATORY REPORT**

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**TO:** 541/Materials Engineering Branch/ M. Viens

**FROM:** 541/Materials Engineering Branch/M. Sovinski

**SUBJECT:** Coefficient of Thermal Expansion (CTE) Analysis of RTV-566 Samples (I.D. CN01704, CN04104, CN02804, CN03504)

**DATE:** July 9, 2004

**ANALYSIS #:** MATG 1878

**PROJECT:** GLAST/ACD

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**Samples Submitted:**

Four samples of RTV-566 silicone were submitted to the Materials Analysis & Technology Group for analysis. The samples were identified as follows: CN01704 (lot #4031512, dated 3/25/04), CN04104 (lot#931, dated 6/9/04), CN02804 (lot#0404283, dated 5/5/04), and CN03504 (lot#873, dated 5/24/04). Each sample was cured for 24 hours at room temperature. The samples were prepared by Kim Moats and Curtis Dunsmore of the Materials Engineering Branch Polymers Lab. This analysis is being done in support of GLAST/ACD.

**Analysis Performed:**

CTE analysis using the Thermomechanical Analysis (TMA) from -150°C to 150°C with a nitrogen purge and a ramp rate of 5°C/minute. The samples were cooled to subambient temperatures using liquid nitrogen.

**Results/ Conclusions:**

The project was interested in measuring the coefficient of thermal expansion (CTE) from -100°C to 125°C. Each sample was run once, and Table 1 provides a summary of the CTE data for the RTV-566 samples. Plot 1 is an overlay plot of the corresponding runs. Table 2 provides an overview of historical test data for RTV-566.

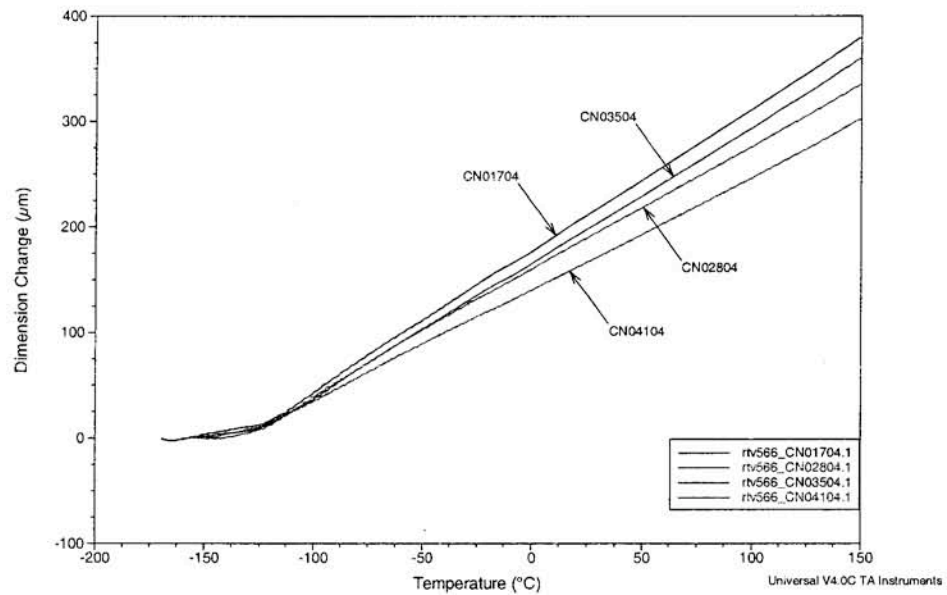
**Table 1: Data for RTV-566 Samples**

Control Number	Lot Number	Date Tested	CTE ( $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ )	T <sub>g</sub> (°C)
CN01704	4031512	3/25/04	312	-122
CN02804	0404283	5/5/04	287	-121
CN03504	873	5/24/04	283	-122
CN04104	931	6/9/04	245	-117

**Table 2: Historical Test Data for RTV-566**

Sample	Lot Number	Date Tested	CTE ( $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ )	T <sub>g</sub> (°C)
RTV-566	----	1/00	282	-113
RTV-566 + air bubbles	----	3/04	303	N/A*

*\*The samples analyzed in 3/04 were only tested over the range of -60°C to 70°C; therefore there is no T<sub>g</sub> data available for this set of samples.*



Plot 1. Overlay Plot of RTV-566 Samples

If there are any questions regarding this report, please contact me at x6-1371.

*Marjorie Sovinski*

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